

Claim Rejections - 35 U.S.C. §103:

In the September 9, 2003 Office Action, claims 1, 2, 4, 5, 7 - 10, 12, 13, 15 - 18, 20 - 22, and 24 - 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,918,020 to Blackard in view of U.S. Patent No. 6,385,673 to DeMoney.

Also, claims 3, 6, 11, 14, 19, and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Blackard and DeMoney in view of U.S. Patent No. 5,418,912 to Christenson.

MPEP §706.02(j) states:

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

MPEP §2143.01 states:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved, as a whole would have suggested to those of ordinary skill in the art. In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

Applicants respectfully submit that the applied references, taken singly or in combination, assuming, arguendo, that the combination of the applied references is proper, do not teach or suggest one or more elements of the claimed invention, as further discussed below.

Applicants hereby incorporate the discussions and arguments of the previous response by the Applicants wherein was discussed the differences between Blackard, DeMoney and Christenson, and the claimed invention. This discussion, however, was in no way meant to acquiesce in any characterization that one or more parts of Blackard, DeMoney and/or Christenson correspond to the claimed invention.

According to embodiments of the present invention, a flow control module is placed in the streams of data as it passes between a plurality of sources from above and below the flow

control module. The flow control module calculates via aggregate counters the aggregate data rate for the upstream and downstream streams of data and the individual data rate (bytes per second) via individual data rate counters associated with each stream of data in both the upstream stream direction and the downstream directions of the streams of data. The aggregate counters are compared to predetermined threshold values for the upstream and downstream data and throttled appropriately. Additionally, the individual data rate counters are each compared to a predetermined individual data rate threshold value and throttled appropriately. The flow control of data using the aggregate data rate counters and the individual data rate counters act upon the data in the upstream and downstream when the threshold values are exceeded. Furthermore, the counters are decremented at predetermined periods by a predetermined number of bytes.

In Fig. 1, an illustration of a block diagram of a flow control module 102 coupled to a plurality of applications 104-110 and a transport layer provider 112 in accordance with an embodiment of the invention. The flow control module 102 is coupled through software to a plurality of applications, labeled “APPLICATION-1” to “APPLICATION-N”, 104-110 respectively. The applications 104-110 are contained at the application software level and interface with the operating system software level. The flow control module 102 is also coupled to the transport layer provider 112 within the operating system software level. The transport layer provider 112 is coupled via software and device drivers to hardware that is connected to a physical media 114 associated with a network.

An aggregate stream of data is comprised of a plurality of individual streams of data from applications 104-110. The flow control module 102 adds to or increments an aggregate counter by the amount of data (i.e. bytes of data) that is received at the flow control module 102 per period of time (i.e. second). The aggregate counter is checked every time data is encountered by comparing the aggregate counter value to a predetermined aggregate threshold (80,000 byte). The aggregate counter is decremented by a predetermined amount every time a timer expires. The timer is set to a predetermined value, such as 1 second. If the aggregate threshold is exceeded when the aggregate counter value is checked then all streams of data from the applications 104-110 are throttled.

Similarly, the individual data rate of each stream of data that make up the combined aggregate stream of data is determined using an individual counter associated with the individual stream of data. If the individual counter exceeds a predetermined threshold value of data bytes, then the stream of data associated with the individual counter is throttled. The individual counters are decremented in a similar way as the aggregate counters. At the expiration of a timer having a predetermined period, such as one second, each of the individual counter values are decremented by a predetermined amount (8,000 bytes). The amount to decrement each individual counter can be unique for each individual counter or all individual counters can be decremented by the same value (8,000 bytes). Furthermore, the individual and aggregate counters in the present embodiment can never go below zero. In an embodiment of the invention the UNIX operating system using the UNIX streams library may selectively be used to enable and disable data flow in response to the individual and aggregate predetermined thresholds.

The applications 104-110 are also active and may be receiving or transmitting data at the same time. As described above, the flow control module 102 has an upstream and downstream aggregate counter for counting the received and transmitted bytes from applications 104-110. When the upstream or downstream aggregate counter exceeds the associated aggregate data rate threshold for a period of time (i.e. a second), the flow control module throttles all the streams of data from the applications 104-110. Similarly, when the individual stream of data exceeds the individual data rate threshold, then the individual stream of data is throttled.

When the aggregate counter no longer exceeds the aggregate data rate threshold, then the throttling of the aggregate stream of data ceases, provided the individual data rate threshold is not exceeded. Similarly, the individual stream of data is unthrottled once the individual data rate for the individual stream of data no longer exceeds the individual data rate threshold.

Each of the independent claims have been amended to include the feature that the throttling of the streams of data occurs independent of the at least one application and the provider. The throttling occurs without rejecting the stream of data.

Support may be found in the specification as originally filed as follows.

The aggregate counters are compared to predetermined threshold values for the upstream and downstream data and throttled appropriately. (see page 2 of the specification, lines 13-15).

On page 5 of the specification it is explained that the individual data rate of each stream of data that make up the combined aggregate stream of data is determined using an individual counter associated with the individual stream of data. If the individual counter exceeds a predetermined threshold value of data bytes, then the stream of data associated with the individual counter is throttled. The individual counters are decremented in a similar way as the aggregate counters. At the expiration of a timer having a predetermined period, such as one second, each of the individual counter values are decremented by a predetermined amount (8,000 bytes). The amount to decrement each individual counter can be unique for each individual counter or all individual counters can be decremented by the same value (8,000 bytes).

On page 11 of the specification it is further explained that if either of the thresholds (aggregate or individual) is exceeded, then the data rate of a stream of data is throttled. The flow control module 608 signals to the implementor 618 via a signal (electrical or software) to throttle the data stream. The implementor 618 in the transport layer provider 616 then throttles the data rate of the stream of data that is being sent to the network 606 by the other transmitter/receiver 620. Therefore, the machine resources are conserved by managing the data flow per unit of time with a shared flow control module 608.

Pursuant to the interview with the Examiner, Applicant believes that the claims now distinguish over the cited prior art, and are therefore in allowable form. The claims have been amended in light of the Examiner's statement in the first paragraph on page 9 of the Office Action.

No combination of the cited references taken singly or in combination results in the claimed invention of the present application. The amended independent claims presented herewith are believed neither anticipated nor obvious over the art of the record. The corresponding dependent claims are believed allowable for the same reasons as the related independent claims, as well as for their own additional characterizations.

Reconsideration and withdrawal of the §103 rejections is therefore respectfully requested.

In view of the above amendments and remarks, allowance of all claims pending is respectfully requested.

Respectfully submitted,



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